

Professional Liability: Engineering the Perfect Deposition

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GOALS FOR THIS PRESENTATION:

- Demonstrate in a light-hearted way some mistakes that can be avoided
 - Help you identify potential traps in a deposition
 - We will be pausing the presentation at certain points to discuss problematic answers that are given, and to rewind the deposition to demonstrate better answers
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DEPOSITION: THE PURPOSE

- Fact finding
- Preservation of testimony
- Learning about opponent.



DEPOSITION: THE SIGNIFICANCE

- Used for motion practice
- Used for mediation
- Used at trial to impeach



DEPOSITION: THE PARTIES

- Plaintiff's Attorney
- Defendant's Attorney
- Court Reporter
- Witness



DEPOSITION: PREPARATION

- Meeting with counsel



DEPOSITION: THE PREPARATION

WITNESS GUIDELINES FOR DEPOSITION AND TRIAL TESTIMONY

The following are suggestions to assist you in giving testimony in this case. Your deposition will probably be given in a lawyer's office with lawyers representing each party in the lawsuit present. Each lawyer in attendance will have an opportunity to ask you questions; the lawyer scheduling the deposition going first. The questions and answers will be taken down by a court reporter. At some later date, your testimony will probably be typed into a transcript by the court reporter for use by the attorneys. You will be "sworn in" to tell the truth before testifying.

You should keep in mind that the attorneys involved will be evaluating the type of impression that you will make in the event that the case eventually goes to trial and you will be called upon to testify once again in front of the judge and jury. Your general appearance, manner of dress, and demeanor will all be important in the lawyer's evaluation of the impact you might have on his case at the trial. It is important that you keep this in mind.

1. **TELL THE TRUTH** – A lie may lose the case. In a lawsuit, as in all other matters, honesty is the best policy. Don't tell a falsehood. Telling the truth requires that a witness testify accurately about what he or she knows and actually saw. If you tell the truth and tell it accurately, nobody can cross you up.
2. **DON'T GUESS** – If you don't know, say you don't know or don't recall or remember. Give positive answers when you can.
3. **UNDERSTAND** – You can't possibly give a truthful and accurate answer unless you understand the question. If you don't understand the question, ask the lawyer to repeat it or rephrase it.
4. **TAKE YOUR TIME** – Give the question as much thought as it requires for you to understand it and think about your answer. Then give the answer.
5. **ANSWER THE QUESTION** that is asked and then stop. Don't volunteer information. Answer the question in as few words as possible. Don't ramble.
6. **TALK DISTINCTLY** and loud enough so everybody can hear you.

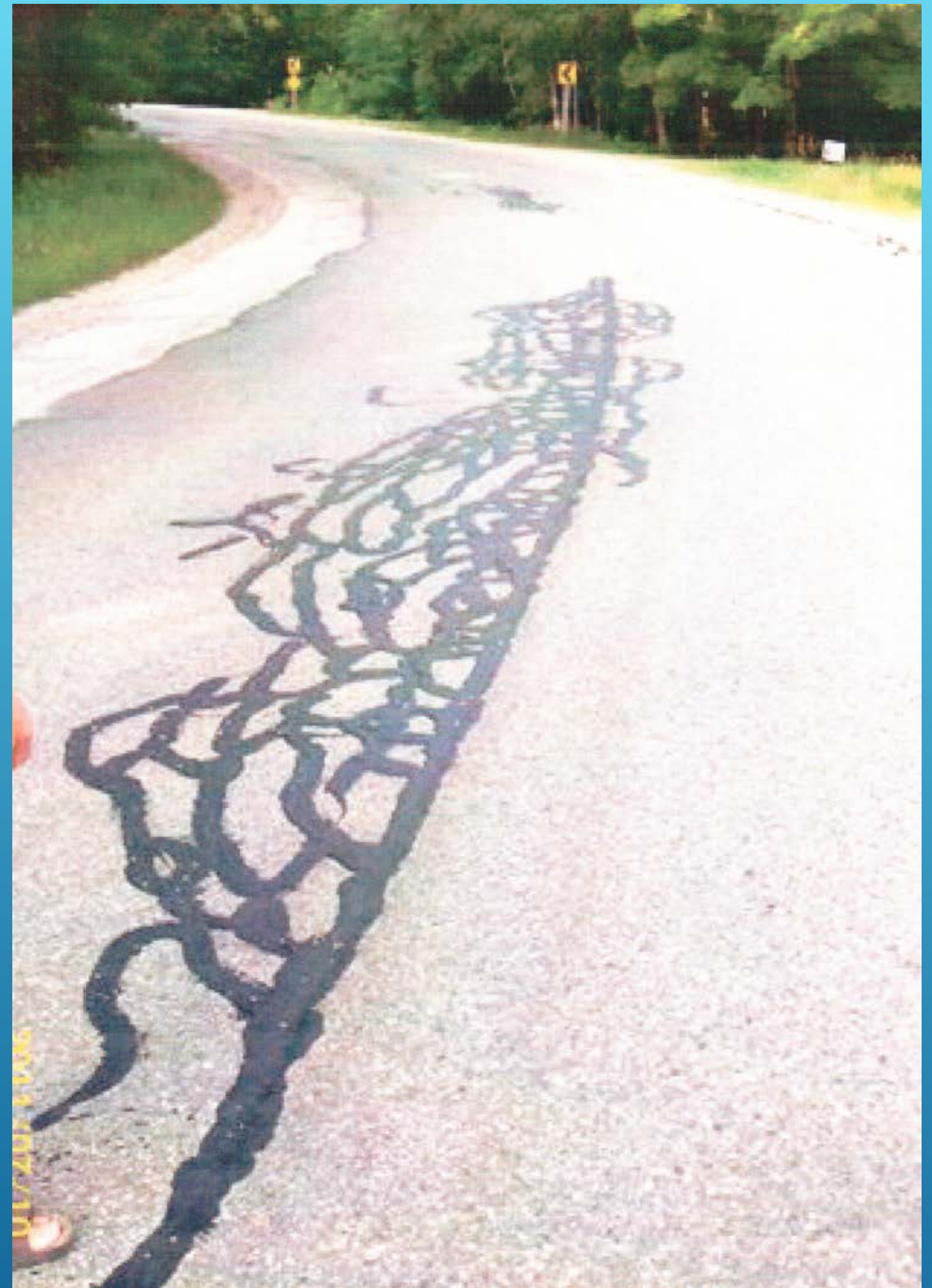
CARRIE STRONG v WALLOON COUNTY ROAD COMMISSION

- Motorcycle crash on a curve



CARRIE STRONG v WALLOON COUNTY ROAD COMMISSION

- Alleges crack seal on road was as slippery as ice



STRONG v WALLOON COUNTY ROAD COMMISSION

BURT R. THOMPSON, P.E.
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STRONG v WALLOON COUNTY ROAD COMMISSION

BURT R. THOMPSON, PE



STRONG v WALLOON COUNTY ROAD COMMISSION

BURT R. THOMPSON, P.E.



STRONG v WALLOON COUNTY ROAD COMMISSION

BILL HENN, J.D.
PLAINTIFF'S COUNSEL



EXHIBIT 1



EXHIBIT 2

502.01

Section 502. HMA CRACK TREATMENT

502.01. Description. This work consists of treating cracks in Hot Mix Asphalt (HMA) surfaces using either a saw or rout and seal process or an overband process.

502.02. Materials. Provide materials in accordance with the following:

Hot Poured Joint Sealant.....	914
Asphalt Binder.....	904
Polyester Fibers.....	904

A. Saw or Rout and Seal. Provide hot-poured joint sealant that meets the requirements of subsection 914.04 for sealing sawn or routed cracks.

B. Overband. Provide overband material as specified in subsection 502.02.B.1 or subsection 502.02.B.2.

1. Overband (Alternate 1). Provide a field-blended liquid mixture with the following characteristics and proportions:

- Performance graded asphalt binder PG 64-22 south of M-46 and PG 58-28 north of M-46;
- Asphalt rubber product selected from the Qualified Product List, 5 percent by weight; and
- Polyester fibers, 5 percent by weight.

If using field mixed material, add the polyester fibers to the polymer-modified asphalt cement and mix in the kettle. Do not allow field mix material to exceed 400 °F.

2. Overband (Alternate 2). Provide an asphalt rubber product selected from the Qualified Product List. Do not allow prepackaged material to exceed 400 °F.

502.03. Construction.

A. Equipment. Provide equipment, in accordance with section 107 and this subsection, capable of meeting the requirements of this subsection.

1. Compressed Air System. Provide and use a compressed air system that produces a continuous, high-volume, high-pressure stream of clean, dry air to prepare cracks. Equip the air compressor with a moisture separator to remove oil and water from the air supply. Provide a compressor capable of producing at least 100 psi at a continuous air flow of 150 cfm.

502.03

Melter Applicator. Provide a melter applicator consisting of a boiler kettle equipped with pressure pump, hose, and applicator wand. Equip the unit with the following:

- Shutoff control on the applicator hose;
- Mechanical full-sweep agitator in the kettle to provide continuous blending;
- Thermometers to monitor the material temperature and heating oil temperature; and
- Thermostatic controls that allow the operator to regulate material temperature up to 425 °F.

Application Wand. Apply the material using either a wand followed by a V-shaped or U-shaped squeegee or a round application head with a concave underside.

Pre-Production Meeting. Before beginning work, conduct an on-site pre-production meeting with the Engineer to discuss the following:

- Contractor's detailed work schedule,
- Traffic control plan,
- Required project documentation,
- Inspection of the condition of equipment,
- The Contractor's Quality Control (QC) Plan, and
- The Contractor's designated Authorized Representative.

Crack Preparation. Clean and dry cracks using compressed air and other tools to remove loose dirt, vegetation, and deleterious material. Clean cracks no more than 10 minutes before filling.

Crack Treatment Methods.

Saw or Rout and Seal. Treat visible working cracks no greater than 1¼ inches wide in the pavement surface using the saw or rout and seal process. Treat working cracks in shoulders unless otherwise required. The Department defines working cracks as cracks that experience considerable horizontal or vertical movement, at least ¼ inch, as a result of temperature change or traffic loading.

Create a reservoir by sawing or routing along the crack. Create the reservoir to a volume of at least 7.5 cubic inches per foot of crack and with a 1:1 width to depth ratio. Ensure the finished reservoir walls are vertical and the reservoir bottom is flat. Place sealant flush or no greater than ¼ inch below the pavement surface.

2. Overband. The Contractor may treat non-working cracks with material placed in an overband configuration. The Department defines non-working cracks as cracks that experience relatively little

EXHIBIT 2

502.03

horizontal or vertical movement, less than 1/4 inch, as a result of temperature change or traffic loading.

Apply overband material to clean, dry cracks. Apply overband 4 inches wide and from 1/8 inch to 3/16 inch thick.

The Contractor may increase the maximum application width to 6 inches for coverage of multiple cracks, with Engineer's prior written approval.

Place temporary pavement markings before opening the road to traffic if overband material obliterates existing pavement markings.

Apply overband as follows unless otherwise required:

- a. **Stand Alone Overband Crack Fill.** If no other surface treatment is required on the pavement, fill visible cracks in the road less than 1 1/4 inch wide.
- b. **Micro-Surfacing Preparation.** If preparing the pavement for a micro-surface overlay, fill visible cracks in the road less than 1 1/4 inch wide.
- c. **Chip Seal Preparation.** If preparing the pavement surface for a single or double chip seal, fill cracks greater than 1/8 inch wide or 3 feet long. Seal cracks with varying widths and portions at least 1/8 inch wide, along the entire length.
- d. **Paver Placed Surface Seal.** If preparing the pavement for a paver placed surface seal, fill cracks with widths from 1/4 inch to 1 1/4 inch.
- e. **HMA Ultra-Thin Overlay.** If preparing the pavement for an HMA ultra-thin overlay, fill visible cracks less than 1 1/4 inch wide.

E. **Weather Limitations.** Place material at air temperatures from 45 °F to 85 °F. Do not place material if moisture is present in the crack.

F. **Cure Time and Repair.** Allow the material to cool before opening the road to traffic. Apply de-tackifying solution, if required, to protect the uncured crack treatment material from tracking. Do not use blotting materials, including sand, aggregate, sawdust, or paper. Repair treated pavement areas, damaged by traffic at no additional cost to the Department.

G. **Quality Control (QC).** Provide and follow a QC plan for production and construction processes. Provide the Engineer a copy of the QC plan for review and approval, prior to the pre-production meeting. Maintain QC measures until the Engineer accepts the work.

Comply with the approved QC plan throughout the project and allow Engineer access to work in progress for assurance review and test. If the Engineer identifies a condition causing unsatisfactory crack treatment, immediately stop production and correct the work at no additional cost to the Department.

Ensure the QC plan addresses at least the following:

1. A detailed description explaining how field crews will determine working and non-working cracks. Separately detail projects with multiple pavement sections.
 2. The sealant material and equipment used to heat, handle, and apply sealant material in accordance with the manufacturer's specifications. Provide the material manufacturer's specifications to the Engineer upon request.
 3. Reservoir configuration for the saw or rout and seal operation.
 4. Procedures for crack cleaning.
 5. Replacement criteria for cutting tools.
 6. Controls implemented to ensure flying dust and debris is not directed toward adjacent traveled lanes, pedestrians, parked vehicles, or buildings.
 7. An action plan for adjusting crack sealing operations to address actual environmental conditions if adverse environmental conditions occur.
 8. Proposed procedure for monitoring the work to ensure acceptance requirements are met.
- H. **Acceptance.** Upon completion of work, schedule an inspection with the Engineer. The Engineer will note deficiencies, including areas exhibiting adhesion failure, cohesion failure, missed cracks, or other factors the Engineer determines unacceptable. Correct work the Engineer identifies as unacceptable. Notify the Engineer upon completion of required corrective work.

502.04. Measurement and Payment.

Pay Item	Pay Unit
Overband Crack Fill, Roadbed	Roadbed Mile
Overband Crack Fill, Ramp	Roadbed Mile
HMA Crack Treatment, Roadbed	Roadbed Mile
HMA Crack Treatment, Ramp	Roadbed Mile

A. **Overband Crack Fill.** The Engineer will measure **Overband Crack Fill, Roadbed** along the roadway centerline. This measurement includes traffic lanes, paved shoulders, auxiliary lanes, and ramps to the

EXHIBIT 2

502.04

2-foot gore point. For divided highways, the Engineer will measure the roadway separately in each direction.

The Engineer will measure **Overband Crack Fill, Ramp** along the ramp centerline beginning at the 2-foot gore point.

The unit prices for **Overband Crack Fill**, of the type required, include the cost of preparing and filling cracks using the overband method, providing the required documentation, corrective work, and temporary traffic markings.

B. HMA Crack Treatment. The Engineer will measure **HMA Crack Treatment, Roadbed** along the roadway centerline. This measurement includes traffic lanes, paved shoulders, auxiliary lanes, and ramps to the 2-foot gore point. For divided highways, the Engineer will measure the roadway separately in each direction.

The unit price for **HMA Crack Treatment, Roadbed** includes the cost of preparing, filling, and sealing the cracks, including treating working cracks with the saw or rout and seal method, and treating non-working cracks with the overband method.

The Engineer will measure **HMA Crack Treatment, Ramp** along the ramp centerline beginning at the 2-foot gore point.

The unit price for **HMA Crack Treatment, Ramp** includes the cost of preparing, filling, and sealing the cracks, including treating working cracks with the saw or rout and seal method, and treating non-working cracks with the overband method.

503.02

Section 503. PAVER PLACED SURFACE SEAL

503.01. Description. This work consists of providing and placing paver placed surface seal (PPSS), including preparing existing pavement and constructing PPSS, uniform in texture, density, and smoothness with no measurable segregation.

503.02. Materials. Provide materials in accordance with the following.

Aggregate	902
Asphalt Emulsion, PPSS	904
Asphalt Binder,	904

A. Asphalt Binder Selection Criteria. Provide PG Asphalt Binder in accordance with Table 503-1.

Location	PG Asphalt Binder
North of M-72 in lower peninsula and the upper peninsula	PG 64-28P
South of M-72 (including M-72)	PG 70-28P
MDOT Metro Region only	PG 70-22P

B. PPSS Mixture Design. Submit a mix design from a Department-approved laboratory to the Engineer, 5 working days before beginning construction. Design the mixture so asphalt binder produces a film thickness of at least 9 microns. Calculate the film thickness in accordance with the *Hot Mix Asphalt Materials, Mixture Design and Construction*, 2nd Edition, National Center for Asphalt Technology.

Provide a mix design in accordance with Table 503-2 and the minimum film thickness. Do not use reclaimed material in the mixture.

C. Mix Design Documentation. Provide the following documents with the mix design:

1. *Contractor Bituminous Mix Design Communication* (Form 1855);
2. *Sample Identification*, include with AWI sample (Form 1923);
3. Average maximum percent draindown for each test temperature (Report);
4. *Tensile Strength Worksheet* (Form 1937);
5. Calculation of film thickness (Report);
6. The material sources for the mix design; and
7. Test results verifying the mix meets the requirements in Table 503-2 and the specified film thickness.

EXHIBIT 3



SPECIFICATIONS FOR 125 GALLON MELTER APPLICATOR WITH COMPRESSOR; WITH PUMP ON DEMAND FEATURES; DIESEL FUELED

420 N. Roosevelt Ave. • Chandler AZ 85226
1-800-528-8242 • (602) 276-0408 • FAX (480) 961-0513
www.crafco.com

MAY 2005

GENERAL

The purpose of these specifications is to describe a double-boiler type melter applicator that is specifically designed for and shall be capable of heating and applying all grades of asphalt rubber sealant, fiber modified asphalt sealant and specification joint sealant without further equipment modification. It may be used for the application of resinous, colored sealant and fillers. This unit shall be the manufacturer's current production model manufactured in the United States of America. The machine shall be capable of starting at ambient temperature and bringing the sealant material up to application temperature in one hour or less. All qualified bidders must have and maintain a complete inventory of repair parts and have experienced, factory-trained service personnel for this equipment. A comprehensive safety manual and an operational/maintenance CD shall be supplied with each unit. A factory-trained person shall be made available for initial start-up and training in the operation of the melter. The material should be heated in a kettle or melter constructed as a double boiler, with space between the inner and outer shells filled with oil or other heat-transfer medium. Thermostatic control for the heat-transfer medium shall be provided and shall have sufficient sensitivity to maintain sealant temperature within the manufacturer's specified application temperature range. Temperature indicating devices shall have intervals no greater than 5°F (2.8°C) and shall be calibrated as required to assure accuracy. The melter shall have continuous sealant agitation and a mixing system to provide uniform viscosity and temperature of material being applied. Do not attempt to apply 2-component or PVC coal tar products with this unit. This includes Crafco "SuperSeal" brand joint sealants.

REQUIRED SAFETY FEATURES

The unit shall have a safety shut-off on the lid that automatically stops the agitator when the lid is opened.

The applicator wand shall be equipped with an automatic shut-off feature that will stop the flow of sealant when the handle is released or dropped.

The sealant line pressure will automatically cease when the sealant flow is stopped. The operator shall not be required to perform any additional activity other than releasing the wand trigger switch to cease sealant line pressure. There shall be no valves in the line to allow interruption of sealant flow from the pump to the wand end. The heat transfer oil shall adequately and efficiently bring the sealant material to application temperature without the use of a heat transfer oil circulation pump. This eliminates the potential exposure of personnel to pressurized hot heat transfer oil.

TOWING FRAME AND JACK

This unit shall be trailer mounted. The longitudinal side frames and tongue members of the trailer shall be on one continuous piece construction composed of hot rolled steel channel having the minimum dimensions of 5 inches (12.70 cm) web, 3/16 inch (.48 cm) thickness with 1.75 inch (4.5 cm) flanges. The configuration of the channels shall be cold formed with the flanges on the outside resulting in a one-piece frame member with no cross welding of or on the flanges to avoid any possibility of flange stress cracking. The tongue shall be equipped with an appropriate heavy duty ball or pintle hitch and shall be adjustable in height above ground level from a minimum of 14 inches (35.6 cm), to a maximum of 32 inches (81.3cm), permitting practically level towing with a wide range of towing vehicles. The towing hitch shall be bolted to the hitch plate for easy height adjustment and/or conversion to other type hitches. A screw-post tongue jack shall be furnished. It shall be a heavy duty type with a load capacity of 7,000 pounds (3,175 kg) and it shall be side mounted and swing away for positive road clearance while under tow.

RUNNING GEAR

The unit shall be equipped with a dual independent rubber torsional suspension having a safe load capacity of 7,000 pounds (3,175 kg), electric brakes, modular wheels and ST 205/75R 14-8 tubeless tires (Load Range C). This suspension eliminates springs and shackles that rust and reduce ground clearance. The melter shall have dual taillights, stop lights and turn signals. Lights shall be ICC approved. A license plate holder shall be attached to the driver's side taillight. All melter fluid tanks shall be positioned no lower than the deck level and be mounted on top of the channel frame members to assure proper ground clearance. The unit shall also be equipped with two safety chains not less than 48 inches (121.9cm) of .38 inch (.97 cm) coil proof chain, attached to the tongue with a drilled type clevis pin on the end attached to the frame and screw type clevis pin on the opposite end. Total shipping weight is approximately 4,020 pounds (1,823 kg).

HEATING TANK

The material heating tank shall be a minimum of 37 inches (93.98 cm) diameter by 28.75 inches (73.02 cm) deep having a minimum capacity of 133.75 gallons (506.3 l) at ambient temperature. The tank will have a rear discharge from the pump and a rear plug outlet. A double boiler type jacket shall create a reservoir that shall hold a minimum of 34.8 gallons (129 l) of heat transfer oil at 70°F (21.1°C). (Note: at 500°F (260°C) the heating oil will expand approximately 18%) The jacket shall wrap around 100% of the outside area of the circular material tank and bottom and allow for complete circulation of the heated transfer oil. The tank and jacket shall be made of not less than 3/16 inch (.94 cm) rolled sheet steel. There shall be one plug to allow the entire heat transfer oil system to be drained. The heat transfer oil shall be of ISO grade 68.

EXPANSION TANK

A sealed expansion tank for heat transfer oil shall be provided to minimize oil oxidation and prevent moisture condensation into the heat transfer oil. Overflow down tubes are unacceptable.

EXHIBIT 3

HYDRAULIC SYSTEM

The hydraulic system shall incorporate a single hydraulic pump to power the agitation and pumping system. All valves shall be solenoid operated by toggle switch and wand handle switch. The controls will allow for bi-directional operation of the sealant pump. A flow control valve will be mounted on the rear of the unit to allow the operator to adjust the pump operational speed. The minimum 32 gallon (121 l) hydraulic tank will be equipped with an internal 10-micron full flow filter. The filter shall be equipped with a restriction indicator to indicate the need for service. A sight gauge level indicator equipped with a thermometer to measure oil temperature will be mounted on the tank and located where it is easily viewed.

INSULATION

The heating tank shall be insulated with a minimum of 1-inch (2.54 cm) thick high temperature ceramic insulation and covered by a 22 gauge (.07 cm) steel outer wrapper. Fiberglass or rock wool insulation is unacceptable due to their moisture retention properties resulting in a significant loss of their insulating value over an eighteen-month period.

LOADING HATCH

A low profile angled lid opening for loading shall be required at the top of the material tank and shall be located on the curbside of the machine for operator safety. The loading height shall be a minimum of 50 inches (127 cm) and shall not exceed 59 inches (149 cm) for correct ergonomic lifting and fume exposure. This will allow the operation of the equipment, including sealant loading, from curbside. Loading systems that require the operator to step onto the melter are unacceptable. The opening shall have a minimum area of 252 square inches (1,625 square cm), while not exceeding 275 square inches (1,774 square cm) in order to prevent heat loss, and shall be hinged to allow placement of a block of sealant onto lid and closure of lid for easy, anti-splash loading.

HEATING SYSTEM

The heat transfer oil is heated by one 12-volt, 250,000 BTU high efficiency forced air diesel fired burner directly at the bottom of the heat transfer oil tank. The total area exposed to the burner shall be a minimum of 5,244 square inches (33,832 square cm). The material tank shall have a minimum of 4,267 square inches (27,529 square cm) of contact with the heat transfer oil. No other mechanical circulation of the heat transfer oil by pump shall be accepted. This provides for a melt rate of 1,000 pounds (450 kg) per hour.

IGNITION OF BURNER

The burner shall be lit by a constant duty high voltage transformer powering an electric spark igniter. This igniter shall work in conjunction with a sensor that detects a lack of burn or ignition and shuts down the fuel supply. The thermostat control is located on the curbside of the machine for operator safety.

INTEGRATED CONTROL SYSTEM

The melter applicator shall have electronic thermostat controls that will automatically regulate hot oil, material and hose temperatures and in turn display these temperatures on digital readouts. The controls shall operate at temperature ranges needed for proper application of sealant. They shall be activated by a single power switch, which will then turn on the agitator and pump at the proper time by use of interlocks. The interlock for the agitation system will not allow the agitator to be activated until the material temperature reaches 275° and the interlock for the pumping system will not allow the pump to be activated until the hose temperature reaches 325°. All temperature controls shall be contained in a single weatherproof control box. This control box shall also contain the engine ignition controls, hour meter and any engine gauges.

DRIVE AND DRIVE CONTROLS

The motive force to the agitator and material pump shall be hydraulic motors driven by a single hydraulic pump. The drive controls governing the rotational speed of the agitator and material pump shall be controlled by adjustable hydraulic valves. The drive controls governing the speed of the material pump shall be controlled electronically from the rear of the machine. The material pump will have infinite speed control and is electrically actuated by a toggle switch on the control panel or a switch on the hand wand. Material pump can be reversed as required.

AGITATION

The sealant material shall be mixed by a hydraulically driven, full sweep vertical agitator with two opposing horizontal paddles and vertical risers attached to the ends. This feature ensures that material remains in complete suspension and that the hot material stays in the lower area of the tank and does not get splashed or thrown to the upper areas of the tank. The agitation system shall be chain driven from the hydraulic motor to the agitator. The agitator rotates in both directions. For additional safety the agitator will shut off automatically when the loading hatch is opened.

BI-DIRECTIONAL VARIABLE SPEED PUMPING UNIT

A hardened steel gear pump is located in the center of the material tank attached to the bottom of the tank. Pumping of material is controlled by a switch on the hand wand and output is controlled hydraulically. The pump and agitator drive shaft stands vertically attached to two motors on the top surface of the tank. One motor rotates an axial tube having radial mixing blades at the chamber bottom. The second motor drives a coaxial shaft running through the tube to the pump. Sealant pumping shall be on demand. When pumping stops, all line pressure and sealant flow shall stop. No external plumbing or recirculation back into the tank is acceptable. No internal or external valves shall be used in the pumping and sealant delivery system. The pump shall be capable of delivering sealant at a rate that exceeds the melt rate of the unit.

ACTIVE PUMP PROTECTION

The pump shall be completely encircled by a protective screen. The screen shall not allow anything larger than ½ inch (1.27 cm) in size to pass from the sealant tank into the pump suction port. The screen shall continuously rotate 360° around the pump whenever the sealant agitator is engaged. The active screen will protect the pump from foreign object damage and will self-clean as it rotates around the sealant pump and suction port.

SEALANT HOSE AND APPLICATOR WAND

Both the hose and wand are heated by low voltage electric current and are temperature regulated. Due to weight and safety considerations, an oil-jacketed hose is unacceptable. The hose shall be specifically manufactured for handling liquid asphalt products up to 500° F (260° C) at 500 psi

EXHIBIT 3

(34.47 bar) working pressure. Hose shall not be less than 18 feet (5.48 m) in length. For maximum operator safety it shall be made of stainless steel braid with a 3/4 inch (1.91 cm) inside diameter and shall be Teflon lined. Further, it shall be heavily insulated to prevent hot material from leaking out. Total diameter of the hose shall be not greater than 2 1/4 inch (5.72 cm). The total weight of the hose shall not exceed 20 pounds (9.07 kg). The hose is to be wrapped with a minimum of three electrical wires with terminal ends. The wires will be capable of heating the hose to 400°F (204° C) in less than 45 minutes and have variable temperature control capability. The hand wand shall be constructed of steel with sufficient strength to withstand normal day-to-day operation. Material flow is controlled by a trigger switch. For greater operator mobility, the connection between the wand and hose shall be through a 360° swivel. There shall be no obstruction or valves between the material pump and the wand end.

The hose is supported by a 6 ft. boom (1.83 m), which swivels side to side on dual pillow block bearings. The boom is centered at the rear of the machine.

ENGINE

The unit shall be equipped with a diesel engine complying with the following specifications:

Electric Start
Three Cylinder 33.3 HP (24.83 kw) @ 3000 RPM
3.62" (92 mm) Stroke
Constant Speed Mechanical Governor
91.3*3 (1.49l) Displacement
Full Flow Oil Filter
3.27" (83 mm) Bore
22 to 1 Compression Ratio
Water Cooled

The engine speed is preset at the factory for optimal alternator output to power the heated wand and hose.
Engine Shutdown Package (low oil pressure & high temperature)

FUEL CAPACITY

The melter shall have a 32 gallon (121 l) diesel fuel tank for operation of the entire unit. The unit will be capable of operating for a minimum of 12 hours on one tank of fuel. The tank shall be equipped with full length sight gauges for fuel level indication protected in a steel cover.

AIR COMPRESSOR

The melter shall be equipped with a 53.8 cfm (1525 l/m) @ 100psi (6.89 bar), Rotary Vane Air Compressor. The compressor shall be driven hydraulically and the air pressure is controlled by a continual intake valve modulation which adjusts the air flow to increase or decrease depending on the user's demands. The compressor has an integral toroidal cooler to maintain proper oil temperature, along with a high temperature shutdown switch for safety. The unit shall also be equipped with a self-contained air to oil hydraulic cooler with an electric switch to turn on/off the cooling fan. The noise level which the compressor puts out is 78 dba @ 1 meter.

PAINT

All painted surfaces shall be coated with DuPont two-part epoxy primer and DuPont two-part urethane paint applied by DuPont certified painters.

OPTIONS (X if to be included:-)

- 2 5/16 inch Ball Hitch
- 2 inch Pinle Hitch
- Sealant Tip Adapter
- 3 inch Pinle Hitch
- V-shaped Squeegee (Qty. ___)
- 3 inch Applicator Disk
- Cold Air Lance
- 1/2 inch Round Sealing Tip
- Extra Electric Hose
- Hot Air Lance
- Lockable Battery Cover
- Extra Hydraulic Filter
- Auto Loader
- Lockable Engine Cover
- Fire Extinguisher Mounted on the Trailer Frame
- Hydraulic Oil Sight Gauge
- Mast Mounted Strobe Light
- Tool Box
- Self-Propelled Power Wheel
- Overnight heater
- Custom Paint
- Hitch Extension, 29"
- Hitch Extension, 34"

TRAINING

An authorized, factory-trained representative will be made available for a full day of training at a facility designated by the bidding agency. At this training session a complete operational, mechanical and safety overview will occur. The CD manual will be viewed and discussed with all concerned personnel. Additionally, the representative will be available at that time for "on the job" safety and field training.

EXHIBIT 3

SAFETY AND TRAINING MANUALS

A written Safety Manual will be provided to the bidding agency.

PARTS

Bidders must show proof that a large stock of parts for the model of equipment upon which he is bidding is maintained at his facility.

AWARD

Equipment is for use by the Highway Department and must meet the requirements of that agency as interpreted by the Highway Commissioner. Prior to award the Purchasing Agency may require a visit to the supplier's facility to assure supplier has plant capacity to manufacture and deliver equipment on time as required. If it is determined that the supplier cannot supply as requested, this is just cause for cancellation.

WARRANTY

The manufacturer shall warranty the equipment for one year or as otherwise noted in the manufacturer's standard warranty policy.

QUALIFICATIONS OF BIDDERS

No bid will be considered unless the bidder can meet the following conditions:

1. That it has in operation a parts/service location and keeps a sufficient stock of parts on hand at all times.
2. That it is bidding upon the stock model chassis that meets the requirements of the specifications without material changes or modifications. The model is regularly advertised and sold as having a capacity of not less than called for herein. The bidder has been engaged in the manufacture of equipment of the type bid upon for at least twenty-four months.

APPROVED EQUAL

The approved make and model for this specification is a Crafco Super Shot 125 Diesel Fueled Melter Applicator with Compressor for crack sealing. Bidders offering to supply other than the approved make and model must supply a detailed description of the equipment being offered. For purposes of comparison a separate list of all deviations to this specification must be attached to your bid document.

Prior to bid award an on-site demonstration of the equipment offered may be requested. All bidders offering other than the approved model listed will be required to provide an on-site demonstration to verify that their unit complies with all specification requirements before their bid will be considered.

Failure to carry out the provisions noted herein is deemed sufficient reason to reject the bidder's proposal.

EXHIBIT 4

DEERY^{BRAND} 102-18B PAVEMENT PRESERVATION PRODUCTS HOT APPLIED SEALANT, Part No. 8010218B

PRODUCT DATA SHEET
JANUARY 2011

DESCRIPTION DEERY 102-18B is a hot applied, single component, elastically modified composition of asphalt cement, virgin synthetic polymer, recycled rubber, and other modifiers. The sealant contains no solvent, is pre-reacted and conforms to the requirements of ASTM D5078 and ASTM D6690 Type I. Approved for use as Overband Crackfill as indicated by Michigan DOT special provisions - stand alone application. DEERY 102-18 B contains a minimum of 18% recycled rubber by weight of asphalt cement. VOC=0 g/l.

USE DEERY 102-18B is a medium high viscosity pavement preservation sealant intended for highway and street applications for sealing longitudinal and transverse joints and random cracks in Asphalt or Concrete pavements where use of maximum levels of recycled rubber is desirable. Ideal for use in an overband configuration. Properly installed, DEERY 102 - 18B is an effective barrier against damage from debris and moisture infiltration into cracks and joints within regions experiencing moderate high and low pavement temperatures.

HEATING Sealant shall be heated in a hot-oil jacketed melter capable of constant mechanical agitation and equipped with a calibrated thermometer to monitor sealant temperature. Material shall be heated to and maintained at Recommended Application Temperature during use. Material can be cooled and then reheated, but only if prolonged heating is avoided. Prolonged heating at or above Recommended Application Temperature may severely damage product. If overheating damage occurs, immediately drain machine completely and refill with new material.

APPLICATION DEERY 102-18B is pre-reacted and can be applied immediately after heating to Recommended Application Temperature. With pavement temperature at 40°F (4°C) or higher, place material into clean, dry crack or prepared reservoir by means of a hand-held pour pot, wheeled push bander or wand applicator. Squeegee to desired width and wipe excess sealant tight to pavement surface. Pavement may be warmed to 40°F (4°C) or higher with a Hot Air Lance.

PROPERTIES of DEERY 102-18B

When sampled and heated to maximum heating temperature in accordance with ASTM D5167

TEST	METHOD	SPECIFICATION
Cone Penetration @ 77°F (25°C)	ASTM D5329	50 - 90 dmm
Flow @ 140°F (60°C)	ASTM D5329	5.0 mm maximum
Bond @ -20°F (-29°C), 50% ext.	ASTM D5329	Pass 3 cycles
Resiliency @ 77°F (25°C)	ASTM D5329	25% - 70%
Flexibility, -20°F (-28°C), 1", 90 degrees, 10 seconds	ASTM D-3111 modified	Pass
Asphalt Compatibility	ASTM D5329	Pass
Vulcanized Recycled Rubber Content	ASTM D2172	18% minimum
<i>By Weight of Asphalt Cement Component</i>		
Recommended Application Temperature	ASTM D5167	380-400°F (193-204°C)*
Maximum Heating Temperature	ASTM D6690	400°F (204°C)

*Temperature of product measured at pavement surface. Use highest Recommended Application Temperature in cool weather.

*Prolonged heating at or above Recommended Application Temperature may severely damage product.

PACKAGING Material is packaged in cardboard boxes sized to accommodate a maximum of 40 lb (18.0 kg). Material contained in each box is wrapped in a quick melt liner which is dissolved and incorporated into the melted product. Standard packaging is 30 lb (13.6 kg) per box, palletized 75 boxes per pallet with an approximate net weight of 2,250 lb (1,021.0 kg). Pallets are moisture protected with a plastic wrapping and bound with a minimum of two layers of UV resistant stretch wrap.

FOR ADDITIONAL INFORMATION

Call: 1-800-227-4059 toll free

Email: info@deeryamerican.com

Web: www.deeryamerican.com

PERFORMANCE Temperature fluctuations, site conditions, surface preparation, traffic, installation technique, material selection, shape factor and surface treatment compatibility influence the effectiveness and useful life of Pavement Preservation treatments. Consider and monitor each element for optimum results. Purchaser and end user should determine applicability for use in their specific conditions.

WARRANTY Manufacturer warrants that these products meet applicable ASTM, AASHTO, Federal or State specifications at time of shipment. Techniques used for the preparation of the cracks and joints prior to sealing or filling are beyond our control as are the use and application of the products; therefore, manufacturer shall not be responsible for improperly applied or misused products. Remedies against manufacturer, as agreed to by manufacturer, are limited to replacing nonconforming product or refund (full or partial) of purchase price from manufacturer. All claims for breach of this warranty must be made within three (3) months of the date of use or twelve (12) months from the date of delivery by manufacturer, whichever is earlier. There shall be no other warranties expressed or implied. For optimum performance, follow manufacturer recommendations for product installation.



420 N. Roosevelt Ave. • Chandler AZ 85226
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www.crafco.com

EXHIBIT 5

Engineered Tools Sealing Tips and Material Handling Tools



Super Shot Drip Stopper Use with Crafcro Super Shot sealing tip. Stops sealant drip once wand trigger is released.

- 1 - PN# 27114 Tip Adapter
- 2 - PN# 50270 Duckbill Valve
- 3 - PN# 27115 Shroud - Tip Adapter



Swivel Applicator

3" Swivel Applicator - PN# 27120
4" Swivel Applicator - PN# 27130

Use with Super Shot Melters & E-Z Pour Melters with or w/o Drip Stopper.



Crafcro Duckbill PN# 50270

Use with Super Shot Melter wands to prevent dripping of material.



Crafcro Sealing Foot / Flush

Used for random asphalt and concrete cracks.
PN# 27154 - Sealing tip/ft assembly 1/4" flush
PN# 27155 - Sealing tip/ft assembly 3/8" flush



Crafcro Sealing Foot / Protruded

Use for straight asphalt and concrete joints.
PN# 27159 - Sealing tip/ft assembly 1/4" protruding
PN# 27160 - Sealing tip/ft assembly 3/8" protruding



Crafcro Joint Sealing Tip

Use for straight asphalt and concrete joints.
PN# 27146 - Sealing tip assembly 1/4"
PN# 27147 - Sealing tip assembly 3/8"



Crafcro Round Sealing Tip

Multi-purpose for random cracks and joints.
Use with a squeegee for most applications.
PN# 27170 - Sealing tip assembly 3/8"

Crafcro Heavy Duty Squeegee w/Aluminum Handle PN# 27199

Used for leveling crack sealant and where a sealant over band is recommended.

Crafcro Replacement Blade PN# 27195
4 in. x 18 in. x 3/8 in.

Crafcro Heavy Duty Compact Squeegee w/Aluminum Handle PN# 27245

Used for leveling crack sealant and where a sealant over band is recommended.

Crafcro Replacement Blade PN# 27241
2 1/2 in. x 17 in. x 3/8 in.

Crafcro Pour Pot with Wheels PN# 40200

Used to apply a uniform band of sealant to a crack or joint. Wheeled for ease of use. Gravity feed with shut off lever.

Crafcro Hand Held Pour Pot PN# 40201

For application of thin crack sealant to a joint or crack. Gravity feed with shut off lever.

Crafcro Detack is an economical, biodegradable liquid from Crafcro that eliminates sealant tack when sprayed onto freshly applied hot pour sealant.

Crafcro RoadSaver Sealant &



www.crafcro.com

AN ERGONIX COMPANY
INC

420 N. Roosevelt Ave., Chandler, Arizona 85226 • Phone 1-800-276-0406 / Fax: 1-480-961-0513

Your local Crafcro Representative:

Blank space for contact information.

EXHIBIT 6

505.01

Section 505. OVERBAND CRACK FILL

505.01 Description. Clean cracks in hot mix asphalt (HMA) pavements and place the specified materials into and over the crack. Place temporary pavement markings where overband materials obliterates the existing pavement markings.

505.02 Materials. Use overband crack filler composed of a mixture of polymer modified asphalt cement and polyester fibers blended to provide 4.5-5.5 percent polyester fibers, by weight. Use materials meeting the following.

Polyester Fibers	904
Polymer Modified Asphalt Cement	904

505.03 Construction

A. Equipment.

- 1. Compressed Air System.** Furnish and use a compressed air system that produces a continuous, high-volume, high pressure stream of clean dry air to prepare cracks. Equip the air compressor with a moisture separator to remove all oil and water from the air supply. Provide a compressor that can produce a minimum of 100 psi and continuous 150 cfm air flow.
- 2. Melter Applicator.** Provide a melter applicator consisting of a boiler kettle equipped with pressure pump, hose and applicator wand. Equip the hose with a shutoff control. Place a mechanical full-sweep agitator in the kettle to provide continuous blending. Equip the unit with thermometers to monitor the material temperature and the heating oil temperature. Provide thermostatic controls that allow the operator to regulate material temperature up to 425 °F.
- 3. Application Wand.** Apply the material by either a wand followed by a "V" or "U" shaped squeegee or a round application head having a concave underside. Apply 4 inches wide for standard coverage. With the prior written approval of the Engineer, application width may be increased to a maximum of 6 inches to provide complete and uniform coverage over multi-crack areas. Apply sealant at a thickness of 1/8 to 3/16 inch.

EXHIBIT 6

505.03

4. **Heat Lance.** Use of a heat lance is allowed to assure that no residual moisture is present in the crack or on the pavement surface where the overband is to be applied. Do not attempt to seal soaked pavement cracks by drying the pavement surface with a heat lance.

B. **Pre-Construction Meeting.** The Engineer will hold a meeting before beginning the work to discuss the following.

1. The Contractor's detailed work schedule.
2. The traffic control plan.
3. Required project documentation.
4. Inspection of the condition and adequacy of equipment.

C. **Crack Preparation.** Clean cracks using compressed air and other tools necessary to remove all loose dirt, vegetation and foreign material. Clean cracks no more than 10 minutes ahead of the filling operation.

D. **Application.** Apply the material to dry and thoroughly clean cracks. Apply as follows unless otherwise specified:

1. **Stand Alone Overband Crack Fill.** When no other surface treatment will be applied to the pavement, fill all visible cracks in the roadbed.
2. **Micro-Surfacing Preparation.** When preparing the pavement for a micro-surface overlay, fill all visible cracks in the roadbed.
3. **Chip Seal Preparation.** When preparing the pavement surface for a single or double chip seal, limit filling to cracks more than $\frac{1}{8}$ inch wide or 3 feet long. Seal cracks with varying widths, portions of which are $\frac{1}{8}$ inch or greater, along their entire length.

E. **Mixing Procedure.** When using field mixed material, add the polyester fibers to the polymer modified asphalt cement and thoroughly mix in the kettle. Do not exceed 400 °F in the field mix or prepackaged material.

F. **Required Project Documentation.** Provide the Engineer, on a daily basis, a report with the following information:

1. Control section, job number, and route number
2. Date, air temperature (°F), a.m. and p.m. weather

EXHIBIT 6

505.04

3. Beginning and ending locations for the day, including lane(s) and direction
4. Quantity of materials used for the day, including lot number.
5. Traffic control typically used, number of traffic control moes, and checks on the traffic control conducted
6. Unique or different situations on the project
7. Contractor's signature

G. **Weather Limitations.** Place material when the pavement temperature is 40 °F or greater. Do not place material if moisture is present in the crack.

H. **Protecting the Work.** Do not permit traffic on the overband crack filler until the material has cooled sufficiently to prevent tracking by vehicle tires. Protect the completed work with cover materials approved by the Engineer. Do not use paper products as cover material. Replace existing pavement markings obliterated by the crack treatment work with temporary pavement markings before the roadway is opened to traffic.

All costs associated with repair of work damaged by traffic and placement of temporary pavement markings will be borne by the Contractor.

I. **Acceptance of Work:** When work is complete on the project, or on a route or job included in the project, schedule an inspection of the work with the Engineer. The Engineer will note all deficiencies including areas exhibiting adhesion failure, cohesion failure, missed cracks, or other factors that show the work is not acceptable. Redo work identified by the Engineer as not acceptable.

Notify the Engineer upon completion of required corrective work, or upon completion of work on the route, job, or project if corrective work is not required.

505.04 Measurement and Payment.

Contract Item (Pay Item)	Pay Unit
Overband Crack Fill, Roadbed	Roadbed Mile
Overband Crack Fill, Ramp	Roadbed Mile

Overband crack fill includes preparing and filling cracks; providing the required documentation; and all corrective action and temporary traffic

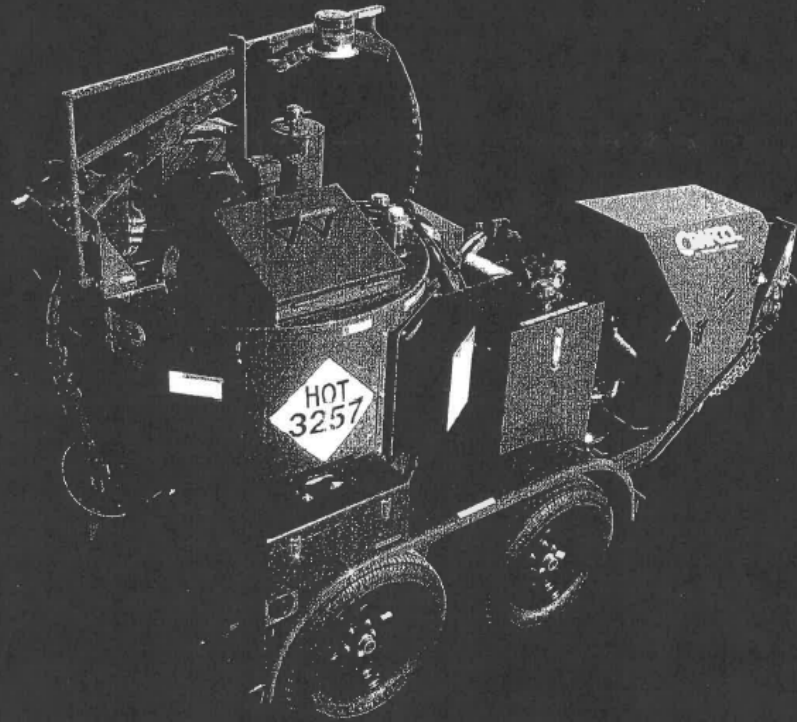
EXHIBIT 6

505.04

markings required. **Overband Crack Fill, Roadbed** will be measured along the roadway centerline and will include the traffic lanes, the paved shoulders, and all auxiliary lanes. For a divided highway, the roadbed will be measured separately in each direction. **Overband Crack Fill Ramp, Ramp** will be measured along the ramp centerline.

EXHIBIT 7

Super Shot Melter/Applicators



AN **ERGON** COMPANY
INC

"Pavement Preservation Products"

SUPER SHOT MELTERS

A PART OF THE CRAFTCO PAVEMENT PRESERVATION SYSTEM

Crafco's total Pavement Preservation Systems include Engineered Performance Applicators and Sealants. Although all our melter/applicators work well with all brands of hot pour sealants, we recommend our Performance Verified sealants for your next project. All sealants are not alike; sealant must be engineered for the proper use and climate. To assist in selecting the right system for your specific application, request a copy of the "Sealant, Adhesive and Patching Products" literature from Crafco or consult your local authorized Crafco Systems representative. Crafco Pavement Preservation Systems represent products that are 100% recyclable, from the containers that they are shipped in to the products themselves. Preserve and protect with Crafco Preservation systems.

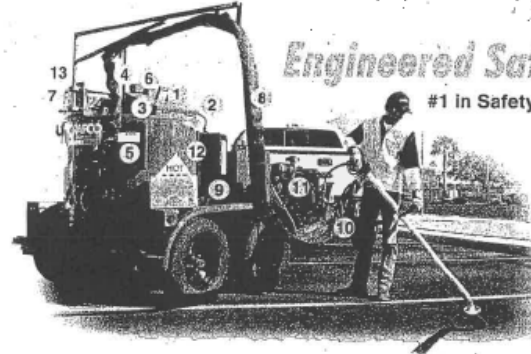
Engineered Performance Design

Crafco Super Shot Melter/Applicators Engineered Performance answers today's challenges of high energy costs and small budgets with innovative features. Available in three sizes to match budgets and job criteria. Super Shot machines get the job done, and get the job done right, quick and economical. No other machine on the market today can match Crafco's Engineered Performance System Machines.

Engineered Efficiency. Crafco's Super Shot engineered pump is mounted inside the melter, eliminating material recirculation, outside plumbing and high-pressure lines, which decreases pump wear. By eliminating the need for re-circulation the pump runs only when material application is needed making this an "on-demand" system which increases pump life

and operator safety. Additionally, an internally mounted pump requires no packing eliminating maintenance. Less maintenance in the shop means more production on the job, more profit and less costs.

Engineered Options and Features Standard Engineered Features make the operation of these melters the safest and the easiest machines to operate. Many of the other features reduce labor and operating costs. The most impressive are the Super Shot Melter Engineered Options. Design the machine you want with these options. Add an optional industrial air compressor and save the cost of running an additional engine and tow vehicle. With over 20 available options you will save time, money and man power.



Engineered Safety

#1 in Safety

- ① Angled Loading Lid
- ② Anti-Splash Lid
- ③ Low Profile Loading Height
- ④ Hot Oil and Sealant Shut Down
- ⑤ Rear Control Box/Digital Gauges
- ⑥ Lid Agitator Shut Off Switch
- ⑦ Bearing Boom
- ⑧ Hose Cover
- ⑨ Low Curb Height
- ⑩ Hitch Extension
- ⑪ Quiet Operation
- ⑫ Curb side Controls
- ⑬ Heat Transfer Overflow Tank

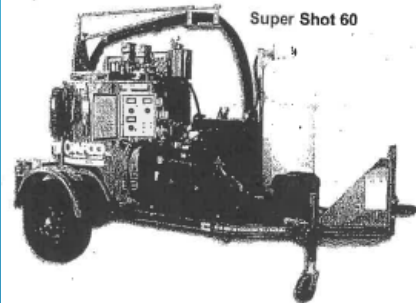
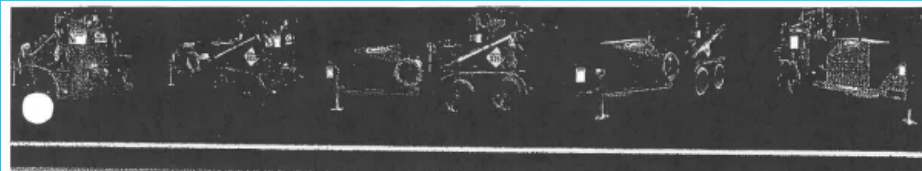
The purchase of a jacketed melter with no overflow tank may cause ground contamination.

Super Shot Melter/Applicators are loaded with standard safety features designed to protect the operator and the public. In addition to standard safety features are optional engineered features such as the autoloader which keeps the operator clear of hot sealant and adds efficiency to the process. Rear controls keep the operator away from traffic on both sides of the unit and the bearing hose boom reduces operator fatigue. Anti splash lids with safety shut off's protect the operator from sealant splash. Review the innovative features of Crafco Melters and you will find these machines to be the most safely engineered machines available.

Items not indicated: Safety Chains, Breakaway Switch, Light Board, Fire Extinguisher, Auto Shut Off, Safety Manual, and Autoloader.

CRAFCO ENGINEERED SUPER SHOT MELTERS ARE BUILT TO LAST

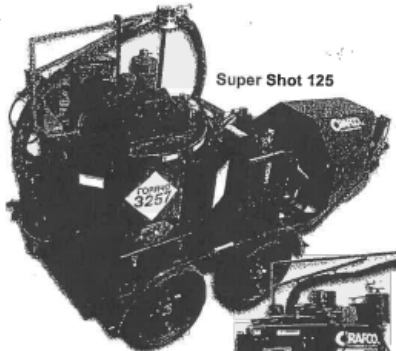
EXHIBIT 7



Super Shot 60

The Crafcro Super Shot series melter/applicators represent the most technologically advanced melter/applicators available. These state-of-the-art machines offer the ultimate in efficiency and ease of use. The digital control features of this equipment accurately control and regulate the heating temperature of the sealant and transfer oil. The patented internal pumping system requires no clean out and features a hydraulic flow rate adjustment. The internal pump only operates when the operator activates the micro-switch on the applicator wand. With "On Demand" pumping there are no valves, fewer moving parts and no hose pressure build up with this state-of-the-art design. Super Shot melters will out-perform any comparable sized machine available. Crafcro offers a one-year warranty, more options, and greater safety, making these machines the greatest value with the highest productivity of any melter. The Crafcro Super Shot Melters are the most efficient and easy to use melter/applicators available today!

There are three sizes to choose from. The Super Shot 60 is a 60-gallon capacity unit, which features automatic digital controls. It is propane fired, with a heated hose and wand. This machine is designed for use on projects under 2,000 pounds of sealant per day. The Super Shot 60 is also available as a skid mount.



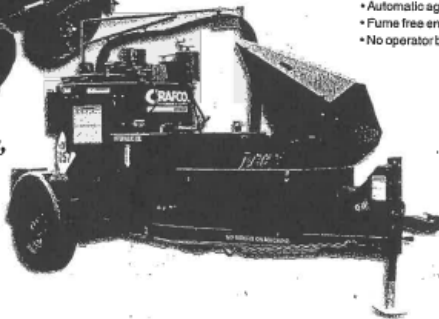
Super Shot 125

The mid-sized 125 gallon capacity Super Shot 125 offers the best versatility. Ideal for mid to large sized projects; this unit is diesel powered, available with an optional compressor or a labor saving AutoLoader. This is our most popular municipal unit.

The oversized 250-gallon SS250 is designed for large projects. This machine will out-perform any melter in its class and is available with many standard options.

Ergonomically Engineered Loading Height Features:

- Splash proof lid
- Automatic agitation shut off
- Fume free environment
- No operator back strain



Choose your size,
choose your options!



HIGH EFFICIENCY MELTERS FEATURING AN ALL NEW HEAT TRANSFER TOWER

Longer Pump Life • Efficient and Aggressive Agitation



The patented pump technology of the Crafcro Super Shot melters is what makes the Super Shot the most productive and lowest maintenance melter in the industry. The Crafcro patented pump is mounted inside the melter. Mounting the pump inside eliminates material re-circulation, outside plumbing, high-pressure lines while decreasing pump wear, make this a true "on-demand" system. The Super Shot pump will last many times longer than a conventional pump. Internal pumps require no packing that can leak eliminating packing maintenance resulting in less maintenance in the shop and more production on the job.



Super Shot 250

SUPER SHOT 60	SUPER SHOT 125	SUPER SHOT 250
Dimensions - 116.25" L / 62.00" W / 72.00" H	128.25" L / 68" W / 83.25" H	174.00" L / 91.25" W / 81.00" H
Shipping Weight - 2,805 lbs / 1,267 kg - Actual	3,801 lbs / 1,724 kg - Actual	5,457 lbs / 2,454 kg - Actual
Gross Weight - 2,805 lbs / 1,267 kg - Approx.	5,100 lbs / 2,312 kg - Approx.	7,057 lbs / 3,199 kg - Approx.
Material Capacity - 60 Gal / 227 liter	125 Gal / 500 liter	250 Gal / 946 liter
Melt Rate - 600 lbs/hr	900 lbs/hr	1,700 lbs/hr
Heat Transfer Oil - 21 Gal / 79 liter	34 Gal / 128 liter	69 Gal / 263 liter
Tank Construction - Double Boiler	Double Boiler	Double Boiler
Tank Opening - 12.25" x 15" / 311.25mm x 381mm	14" x 18" / 355.6mm x 457.2mm	16" x 24" / 407.3 mm x 609.6mm
Loading Height - 50 in / 127 cm	58.0 in / 147.3 cm	58 in / 147.3 cm
Rear Inlet - 180,000 lbs	250,000 lbs	290,000 lbs
Diesel Fuel Capacity	28 Gal / 107 liter	32 Gal / 121 liter
Propane Capacity - 100 lbs / 45.3 kg	21 Gal / 79 liter	26 Gal / 98 liter
Hydraulic Oil Capacity - 26 Gal / 98 liter	Three Gal. In-line Mod 3021 25.4 BHP @ 3,000 RPM	Three Gal. In-line Mod 3021 25.4 BHP @ 3,000 RPM
Engine Standard - Kubota Model, CR355-D1P @ 3000RPM	53 (30 cfm) Three Gal. In-line Mod 3021 33 BHP @ 3,000 RPM	53 (30 cfm) Three Gal. In-line Mod 3021 33 BHP @ 3,000 RPM
Engine Option (W/Compressor) NA	70 (30 cfm) Three Gal. In-line Mod 3021X 41.6 BHP @ 3,000 RPM	70 (30 cfm) Three Gal. In-line Mod 3021X 41.6 BHP @ 3,000 RPM
Axle Capacity - 2000 lbs. Torsional 1907 kg	2000 lb. Torsional / 907 kg	2000 lb. Torsional / 907 kg
Tires - ST175, 8.25 D-13	ST225/75R15	ST225/75R15
Air Compressor (Optional) NA	53.8 CFM @ 100 PSI / 70CFM @ 100PSI	53.8CFM @ 100PSI / 70CFM @ 100PSI
Service Area Material Tank - 2,500 in ³ / 16,347 cm ³	4,272 in ³ / 27,285 cm ³	4,622 in ³ / 28,380 cm ³
Service Area Oil Tank - 5,200 in ³ / 31,516 cm ³	5,277 in ³ / 34,335 cm ³	7,635 in ³ / 46,367 cm ³
Ratio of Tank service Area - 1.50:1	1.26:1	1.35:1
Controls - Standard Super Shot	Standard Super Shot	Standard Super shot
Control Location - Rear Control Station	Front and Rear	Front and Rear
Raise Style - Electric	Electric	Electric
Lower Style - Electric	Electric	Electric
Hydro Compartment - No	No	No
Material Restriction - No	No	No
Buses - Sliding Bearing	Sliding Bearing	Sliding Bearing
Driver Dec - N/A	Removable Face Plate	Removable Face Plate

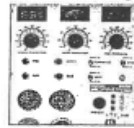
For bid specifications go to
www.crafcro.com.

800.528.8242

EXHIBIT 7



Engineered Performance Features



QUICK AND EASY START-UP

With the flip of a toggle switch the Super Shot will be ready to operate in less than an hour. Shut down at the end of the day is just as easy.



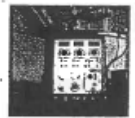
Webbed Reinforced Welded Frame

HEATED HOSE
The low voltage electric heated hose heats material to application temperature within 45 minutes. The hose has the longest working radius in the industry, a 360° swivel, protected sleeve, and a repairable hose and wand.



Automatic Agitator Shut-Off and Splash Proof Lid

Shut offs are incorporated into the lid, hose, wand, pump, burner, and electrical controls.



Integrated Operator Control System

Controls operate the entire unit and overrides possible operator error. Integrated control box houses all the gauges, switches, and engine.



Optional Compressor

Compressor runs air lance used to clean out dirt and debris from cracks increasing crack sealing efficiency.



Optional Engine Cover

Protects engine from the elements, vandalism and theft.



Efficient Burner

Burner is positioned safely within the frame giving it protection and ample ground clearance. Time saving electric overnight pre-heater option available.



Low Profile

Low center of gravity provides easy loading, yet has ample unobstructed ground clearance for safe towing over the most rugged road conditions.

Engineered Performance Options

Crafco offers many Engineered Performance Options to increase production, save labor and lower operating costs. The versatility of the Super Shot units allows you to specify options in your time frame, from the initial placement of the order all the way through production. Most Super Shot units have been engineered to accept any option, whether it's an autoloader, compressor, light bar or fire extinguisher. These options will enhance production, increase safety and security.

Engine covers and battery boxes protect the engine from the elements and add security. The autoloader increases production, adds safety and decreases operator fatigue. The overnight heater is an on the job must if you want to reduce start up time. The light bar is essential for added safety to direct traffic and increase driver awareness. No other machine comes as complete or as diversified.



- Engine Cover
- Gravity Feed
- Arrow Board Kit
- Surge Brakes
- Engine w/ Gauges
- Autoloader
- 50, 70 CFM Compressor
- Custom Paint
- Hitch Selection
- Electric Plug Selection
- Hitch Extension
- Cab Brake Control
- Break-away Battery w/ charger
- Locking Battery Box
- Light Bar
- Overnight Heater
- Fire Extinguisher - 10 or 20 lb
- Tool Box
- Safety Hooks
- Mud Flaps
- Spare Tire Kit
- 100 lb propane tank kit

CRAFCO ENGINEERED OPTIONS AND FEATURES REDUCE OPERATING AND LABOR COSTS

EXHIBIT 8

OVERBAND CRACK FILL

ASSOCIATION OF COUNTY ROAD SUPERINTENDENTS OF MICHIGAN

OCTOBER 5, 2011

BURT R. THOMPSON, P.E.

EXHIBIT 8



EXHIBIT 8

DON'TS

Excessive cracking should not be treated with this material

- **there is something wrong in the base and crack filling will not solve the problem, or**
- **the pavement is beyond crack filling**
- **is just a waste of material**

EXHIBIT 8

DON'TS

This can become a hazard

- **it can become slippery when wet**
- **motorcycles don't like it**

REPTILIAN THEORY



REPTILIAN THEORY

- Reptile's brain is conditioned to favor safety and survival.
- Strategy is to appeal to part of the brain responsible for survival instincts.



REPTILIAN THEORY

- Plaintiff's attorney wants the jury to make decisions rooted in fear, not reason or logic.



REPTILIAN THEORY

- Caging the Reptile
 - Avoid the “safety rule” trap
 - Show the jury the complexity that the reptile cannot comprehend.



Questions?

Thank you!



February 5, 2019